CLAIMS

What is claimed is:

1. A system for resequencing a stream of packets comprising:

a plurality of distributed resequencing components, each of the plurality of

5   distributed resequencing components including one or more data structures for

maintaining an indication of packets of the stream of packets that are stored in other

distributed resequencing components of the plurality of distributed resequencing

components;

a communications mechanism coupled to the plurality of distributed resequencing

10   components to allow communication among the plurality of distributed resequencing

components; and

one or more packet merging mechanisms coupled to the plurality of distributed

resequencing components to receive packets of the stream of packets to produce a

resequenced stream of the stream of packets.

15   2. The system of claim 1, further comprising a distributor for distributing the

stream of packets to the plurality of distributed resequencing components.

3. The system of claim 2, wherein the distributor includes a plurality of paths

through a packet switching system.

4. The system of claim 3, wherein at least two of the plurality of path are on

20   different planes of the packet switching system.

5. The system of claim 1, wherein the communications mechanism includes a

communication ring or bus.

6. The system of claim 1, wherein the one or more packet merging mechanisms

includes a packet merge bus.

7. A packet switching system including the system of claim 1.

8. A router including the system of claim 1.

9. A system for resequencing a stream of packets comprising:

a plurality of means for resequencing the stream of packets, each of the plurality

5   of means for resequencing the stream of packets including a data structure means for

indicating which packets of the stream of packets are located in other of the plurality of

means for resequencing the stream of packets;

a communications means coupled to the plurality of means for resequencing the

stream of packets; and

10   a merging means for receiving packets from the plurality of means for

resequencing the stream of packets and for producing a resequenced stream of the stream

of packets.

10. The system of claim 9, further comprising a packet switching means,

connected to the plurality of means for resequencing the stream of packets, for

15   distributing packets of the stream of packets to the plurality of means for resequencing the

stream of packets.

11. The system of claim 9, wherein each of the means for resequencing the stream

of packets includes a local data structure means for maintaining an indication of the

packets stored locally within a particular means for resequencing the stream of packets.

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12. A method for resequencing a stream of ordered packets performed by a particular component of a plurality of components, the method comprising:

receiving at least one packet of the stream of ordered packets;

receiving an indication of a set of packets received in at least one other component

5 of the plurality of components;

maintaining one or more data structures of the set of packets received in at least one other component of the plurality of components and the received at least one packet of the stream of ordered packets;

maintaining a current position indication; and

10 sending a particular packet out as part of the resequenced stream based on a value of the current position indication.

13. The method of claim 12, further comprising updating the current position indication based on the sending of the particular packet.

14. The method of claim 12, further comprising updating the current position

15 indication based on the received indication of the set of packets contained in the at least one other component of the plurality of components.

15. The method of claim 12, wherein the sending of the particular packet includes coordinating the timing for sending of the particular packet with at least another component of the plurality of components.

20 16. The method of claim 12, wherein the indication of the set of packets contained in the at least one other component of the plurality of components is received over a communications ring or bus.

17. The method of claim 12, further comprising sending an update indication identifying the sent particular packet to one or more of the other components of the

25 plurality of components.

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18. The method of claim 17, wherein the update indication includes a sequence identifier of the sent particular packet.

19. The method of claim 12, wherein each of the packets of the stream of ordered packets is identified with a sequence identifier.

5   20. The method of claim 19, wherein the sequence identifier is a sequence number or a timestamp value.

21. The method of claim 12, further comprising storing the received at least one packet on a storage device or in a memory; and retrieving the received at least one packet from the storage device or the memory.

10   22. A packet switching system performing the method of claim 12.

23. A router performing the method of claim 12.

24. A computer system performing the method of claim 12.

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